

Serial # 0.8/992,914

date: 9-10-98

=> s raffinose synthase

L1 8 RAFFINOSE SYNTHASE

=> s transgenic

L2 52105 TRANSGENIC

=> s l1 and l2

L3 1 L1 AND L2

=> d l3

L3 ANSWER 1 OF 1 CAPLUS COPYRIGHT 1998 ACS
AN 1998:217308 CAPLUS
DN 128:318794
TI Cloning of cDNA for **raffinose synthase** from
cucumber, and its use for preparing raffinose or **transgenic**
plants low in raffinose-type oligosaccharides
IN Oosumi, Chieko; Nozaki, Shinji; Kida, Takao
PA Ajinomoto Co., Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
PI JP 10084973 A2 980407 Heisei
AI JP 97-111124 970428
PRAI JP 96-107682 960426
JP 96-198079 960726
DT Patent
LA Japanese

=> d l1 1-8

L1 ANSWER 1 OF 8 BIOSIS COPYRIGHT 1998 BIOSIS
AN 98:339293 BIOSIS
DN 01339293
TI Characterization and gene cloning of **raffinose**
synthase from *Cucumis sativus*.
AU Ohsumi C; Nozaki J; Kida T
CS Ajinomoto Co. Inc., CRL., Kawasaki 210, Japan
SO 1998 Annual Meeting of the Japanese Society of Plant Pathologists,
Tokyo, Japan, May 3-5, 1998. Plant and Cell Physiology 39 (SUPPL.).
1998. S131. ISSN: 0032-0781
DT Conference
LA English

L1 ANSWER 2 OF 8 BIOSIS COPYRIGHT 1998 BIOSIS
AN 98:339292 BIOSIS
DN 01339292
TI Purification of **raffinose synthase** from *Cucumis*
sativus leaves.
AU Nozaki J; Ohsumi C; Kida T
CS Ajinomoto Co. Inc., CRL., Kawasaki 210, Japan
SO 1998 Annual Meeting of the Japanese Society of Plant Pathologists,
Tokyo, Japan, May 3-5, 1998. Plant and Cell Physiology 39 (SUPPL.).
1998. S131. ISSN: 0032-0781

DT Conference
LA English

L1 ANSWER 3 OF 8 BIOSIS COPYRIGHT 1998 BIOSIS
AN 90:197835 BIOSIS
DN BA89:104506
TI **RAFFINOSE SYNTHASE** AND GALACTINOL SYNTHASE IN
DEVELOPING SEEDS AND LEAVES OF LEGUMES.
AU CASTILLO E M; DE LUMEN B O; REYES P S; DE LUMEN H Z
CS DEP. NUTRITIONAL SCI., UNIV. CALIFORNIA, BERKELEY, CALIF. 94720.
SO J AGRIC FOOD CHEM 38 (2). 1990. 351-355. CODEN: JAFCAU ISSN:
0021-8561
LA English

L1 ANSWER 4 OF 8 AGRICOLA
AN 91:43724 AGRICOLA
DN IND91018838
TI **Raffinose synthase** and galactinol synthase in
developing seeds and leaves of legumes.
AU Castillo, E.M.; Lumen, B.O. de; Reyes, P.S.; Lumen, H.Z. de
CS University of The Philippines, Los Banos, Los Banos, The Philippines
AV DNAL (381 J8223)
SO Journal of agricultural and food chemistry, Feb 1990. Vol..38, No.
2. p. 351-355
Publisher: Washington, D.C. : American Chemical Society.
CODEN: JAFCAU; ISSN: 0021-8561
NTE Includes references.
DT Article
FS U.S. Imprints not USDA, Experiment or Extension
LA English

L1 ANSWER 5 OF 8 CAPLUS COPYRIGHT 1998 ACS
AN 1998:217308 CAPLUS
DN 128:318794
TI Cloning of cDNA for **raffinose synthase** from
cucumber, and its use for preparing raffinose or transgenic plants
low in raffinose-type oligosaccharides
IN Oosumi, Chieko; Nozaki, Shinji; Kida, Takao
PA Ajinomoto Co., Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
PI JP 10084973 A2 980407 Heisei
AI JP 97-111124 970428
PRAI JP 96-107682 960426
JP 96-198079 960726
DT Patent
LA Japanese

L1 ANSWER 6 OF 8 CAPLUS COPYRIGHT 1998 ACS
AN 1992:55624 CAPLUS
DN 116:55624
TI Distribution and immunolocalization of stachyose synthase in Cucumis
melo L
AU Holthaus, Uta; Schmitz, Klaus
CS Bot. Inst., Univ. Koeln, Cologne, W-5000/41, Germany
SO Planta (1991), 185(4), 479-86
CODEN: PLANAB; ISSN: 0032-0935
DT Journal
LA English

L1 ANSWER 7 OF 8 CAPLUS COPYRIGHT 1998 ACS
AN 1990:115882 CAPLUS
DN 112:115882
TI **Raffinose synthase** and galactinol synthase in
developing seeds and leaves of legumes

AU Castillo, Eugenia M.; De Lumen, Benito O.; Reyes, Pilar S.; De
Lumen, Helen Z.
CS Dep. Nutr. Sci., Univ. California, Berkeley, CA, 94720, USA
SO J. Agric. Food Chem. (1990), 38(2), 351-5
CODEN: JAFCAU; ISSN: 0021-8561
DT Journal
LA English
OS CJACS

L1 ANSWER 8 OF 8 WPIDS COPYRIGHT 1998 DERWENT INFORMATION LTD
AN 98-264858 [24] WPIDS
DNN N98-208774 DNC C98-082361
TI **Raffinose synthase** gene - useful for preparation
of raffinose in transformed plant.
DC C06 D16 P13
PA (AJIN) AJINOMOTO KK
CYC 1
PI JP 10084973 A 980407 (9824)* 26 pp C12N015-09
ADT JP 10084973 A JP 97-111124 970428
PRAI JP 96-198079 960726; JP 96-107682 960426
IC ICM C12N015-09
ICS A01H005-00; C12N009-00

=> s raffinose

L4 6845 RAFFINOSE

=> s synthase

L5 89205 SYNTHASE

=> s 14 and 15

L6 107 L4 AND L5

=> s transgenic

L7 52105 TRANSGENIC

=> s 16 and 17

L8 3 L6 AND L7

=> d 18 1-3

L8 ANSWER 1 OF 3 CAPLUS COPYRIGHT 1998 ACS
AN 1998:217308 CAPLUS
DN 128:318794
TI Cloning of cDNA for **raffinose synthase** from
cucumber, and its use for preparing **raffinose** or
transgenic plants low in **raffinose**-type
oligosaccharides
IN Oosumi, Chieko; Nozaki, Shinji; Kida, Takao
PA Ajinomoto Co., Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
PI JP 10084973 A2 980407 Heisei
AI JP 97-111124 970428
PRAI JP 96-107682 960426
JP 96-198079 960726
DT Patent
LA Japanese

L8 ANSWER 2 OF 3 CAPLUS COPYRIGHT 1998 ACS

AN 1993:553371 CAPLUS
 DN 119:153371
 TI Nucleotide sequences for galactinol **synthase** from zucchini and soybean
 IN Kerr, Phillip S.; Pearlstein, Richard W.; Schweiger, Bruce J.; Becker-Manley, Mary F.; Pierce, John W.
 PA du Pont de Nemours, E. I., and Co., USA
 SO PCT Int. Appl., 79 pp.
 CODEN: PIXXD2
 PI WO 9302196 A1 930204
 DS W: AU, BB, BG, BR, CA, CS, FI, HU, JP, KP, KR, LK, MG, MN, MW, NO, PL, RO, RU, SD, US
 RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GR, IT, LU, MC, ML, MR, NL, SE, SN, TD, TG
 AI WO 92-US6057 920724
 PRAI US 91-735066 910724
 DT Patent
 LA English

 L8 ANSWER 3 OF 3 WPIDS COPYRIGHT 1998 DERWENT INFORMATION LTD
 AN 93-058793 [07] WPIDS
 DNN N93-044772 DNC C93-026307
 TI Nucleotide sequence of galactinol **synthase** from zucchini and soybean - used to produce plants having altered levels of **raffinose** saccharide(s) and/or sucrose.
 DC C06 D16 P13
 IN BECKER-MANLEY, M F; KERR, P S; PEARLSTEIN, R W; PIERCE, J W; SCHWEIGER, B J
 PA (DUPO) DU PONT DE NEMOURS & CO E I
 CYC 37
 PI WO 9302196 A1 930204 (9307)* EN 80 pp C12N015-54
 RW: AT BE CH DE DK ES FR GB GR IT LU MC NL OA SE
 W: AU BB BG BR CA CS FI HU JP KP KR LK MG MN MW NO PL RO RU SD US
 AU 9224205 A 930223 (9324) C12N015-54
 ZA 9205592 A 940330 (9417) 76 pp C07H000-00
 EP 604458 A1 940706 (9426) EN C12N015-54
 R: FR
 US 5648210 A 970715 (9734) 24 pp C12Q001-68
 US 5773699 A 980630 (9833) A01H001-04
 ADT WO 9302196 A1 WO 92-US6057 920724; AU 9224205 A AU 92-24205 920724; ZA 9205592 A ZA 92-5592 920724; EP 604458 A1 EP 92-917170 920724, WO 92-US6057 920724; US 5648210 A WO 92-US6057 920724, US 94-182060 940823; US 5773699 A Cont of US 91-735066 910724, Cont of WO 92-US6057 920724, Cont of US 94-182060 940823, US 96-712702 960912
 FDT AU 9224205 A Based on WO 9302196; EP 604458 A1 Based on WO 9302196; US 5648210 A Based on WO 9302196; US 5773699 A Cont of US 5648210
 PRAI US 91-735066 910724; US 94-182060 940823; US 96-712702 960912
 IC ICM A01H001-04; C07H000-00; C12N015-54; C12Q001-68
 ICS A01H005-00; C07H021-02; C07H021-04; C12N001-21; C12N005-10; C12N015-11; C12N015-29; C12N015-82; C12P019-18; C12P019-34

=> d 18 2-3 ab

L8 ANSWER 2 OF 3 CAPLUS COPYRIGHT 1998 ACS
 AB The cDNA for zucchini leaf and soybean seed galactinol **synthase** (I) are cloned and expressed in a **transgenic** plant or a host cell using an appropriate regulatory sequence. The plant or plant cell transformed with the cDNA operatively linked to a promoter, e.g., the 35S promoter, may have a varied level of I and thus the desirable levels of **raffinose** saccharides and sucrose. Nucleotide fragments derived from the cDNA can be used for RFLP breeding of altered levels of **raffinose** saccharides and sucrose traits in

soybeans. I may also be prepd. in a host, e.g., Escherichia coli, and used for prep. galactinol.

L8 ANSWER 3 OF 3 WPIDS COPYRIGHT 1998 DERWENT INFORMATION LTD
AB WO 9302196 A UPAB: 931119

An isolated nucleic acid fragment (I) comprising a nucleotide sequence encoding plant galactinol **synthase** (GaS) is new.

Also claimed are: (1) a chimeric gene (II) capable of being expressed in transformed plants, comprising (I) operably linked to a suitable regulatory sequence; (2) a chimeric gene (III) capable of being expressed in transformed plants, comprising a nucleic acid fragment encoding antisense RNA complementary to plant GaS; (3) a chimeric gene (IV) capable of being expressed in transformed microorganisms, comprising (I) operably linked to a suitable regulatory sequence; (4) plants transformed with (II) and (III) respectively; (5) seeds obtd. from the plants of (4); (6) a microorganism transformed with (IV); (7) methods for obtaining plants and plant cells contg. altered levels of **raffinose** saccharides and/or sucrose; (8) 2 methods for producing galactinol; (9) a method of RfLP breeding of altered levels of **raffinose** saccharides and sucrose traits in soybeans; (10) a method of varying the level of D-galactase contg. oligosaccharides of sucrose in plants in response to end-user requirements.

USE/ADVANTAGE - **Transgenic** plants that produce higher than normal levels of **raffinose** saccharides possess enhanced cold tolerance and in coniferous species will result in reduced post harvest needle abscission. **Transgenic** plants that produce lower than normal levels of **raffinose** saccharide are more easily digestible and have larger amts. of metabolisable energy. In sugar beets in particular, a decrease in **raffinose** saccharide content would improve sucrose crystallisation and overcome the need for expensive processing of sugar beet extracts. The enzyme can be used for prodn. of galactinol, and the nucleic acid fragments can be used as RFLP markers in soybean genetic studies and breeding programs

Dwg.0/3

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[Yeast](#) [Volume 8](#)[Issue 2](#)VIEWING OPTIONS: [\[MEDLINE\]](#) [\[full MEDLINE\]](#) [\[related records\]](#)**IMP2, a nuclear gene controlling the mitochondrial dependence of galactose, maltose and raffinose utilization in *Saccharomyces cerevisiae*.**Donnini C, Lodi T, Ferrero I, Puglisi PP*Yeast* 1992 Feb 8:2 83-93**Abstract**

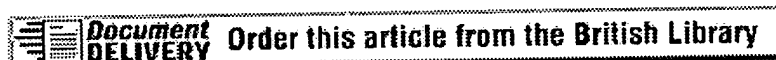
The IMP2 gene of *Saccharomyces cerevisiae* is involved in the nucleo-mitochondrial control of maltose, galactose and raffinose utilization as shown by the inability of *imp2* mutants to grow on these carbon sources in respiratory-deficient conditions or in the presence of ethidium bromide and erythromycin. The negative phenotype cannot be scored in the presence of inhibitors of respiration and oxidative phosphorylation, indicating that the role of the mitochondria in the utilization of the above-mentioned carbon sources in *imp2* mutants is not at the energetical level. Mutations in the IMP2 gene also confer many phenotypic alterations in respiratory-sufficient conditions, e.g. leaky phenotype on oxidizable carbon sources, sensitivity to heat shock and sporulation deficiency. The IMP2 gene has been cloned, sequenced and disrupted. The phenotype of null *imp2* mutants is indistinguishable from that of the originally isolated mutant.

MeSH

[Amino Acid Sequence](#) ; [Base Sequence](#) ; [Carbohydrates](#) ; [Galactose](#) ; [Genes, Fungal](#) ; [Genetic Complementation Test](#) ; [Maltose](#) ; [Mitochondria](#) ; [Molecular Sequence Data](#) ; [Mutation](#) ; [Phenotype](#) ; [Plasmids](#) ; [Raffinose](#) ; [Saccharomyces cerevisiae](#) ; [Support, Non-U.S. Gov't](#) ;

Author Address

Istituto di Genetica, Universita di Parma, Italy.

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NCBI Entrez Nucleotide QUERY BLAST Entrez ?

Other Formats:

FASTA

Graphic

Links:

MEDLINE

Protein

Related Sequences

LOCUS SCIMP2 2071 bp DNA PLN 18-AUG-1993
 DEFINITION S. cerevisiae IMP2 gene.
 ACCESSION X61928 S94332
 NID g3829
 KEYWORDS IMP2 gene.
 SOURCE baker's yeast.
 ORGANISM Saccharomyces cerevisiae
 Eukaryotae; mitochondrial eukaryotes; Fungi; Ascomycota;
 Hemiascomycetes; Saccharomycetales; Saccharomycetaceae;
 Saccharomyces.
 REFERENCE 1 (bases 1 to 2071)
 AUTHORS Lodi,T.
 TITLE Direct Submission
 JOURNAL Submitted (04-SEP-1991) T. Lodi, Inst di Genetica, Viale dele
 Scienze, I-43100 Parma, ITALY
 REFERENCE 2 (bases 1 to 2071)
 AUTHORS Donnini,C., Lodi,T., Ferrero,I. and Puglisi,P.P.
 TITLE IMP2, a nuclear gene controlling the mitochondrial dependence of
 galactose, maltose and raffinose utilization in Saccharomyces
 cerevisiae
 JOURNAL Yeast 8 (2), 83-93 (1992)
 MEDLINE 92221693
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2041 cccacccgcc gctccaccgc aggtctctag a
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the above report in

format

NCBI Entrez Nucleotide QUERY BLAST Entrez ?

Other Formats: FASTA Graphic
 Links: Protein Related Sequences

LOCUS PPSURFOP 21839 bp DNA BCT 24-MAY-1994
 DEFINITION P.pentosaceus (PPE1.0) sucrose and raffinose operons.
 ACCESSION Z32771
 NID g493728
 KEYWORDS alpha-galactosidase; alpha-glucosidase; enzyme IIabc; fructokinase;
 insertion element; permease; regulator; sucrase.
 SOURCE Pediococcus pentosaceus.
 ORGANISM Pediococcus pentosaceus
 Eubacteria; Firmicutes; Low G+C gram-positive bacteria;
 Lactobacillaceae; Pediococcus.
 REFERENCE 1 (bases 1 to 21839)
 AUTHORS Leenhouts, K.K.J., Bolhuis, A.A., Kok, J.J. and Venema, G.G.
 TITLE The sucrose and raffinose operons of *Pediococcus pentosaceus* PPE1.0
 JOURNAL Unpublished
 REFERENCE 2 (bases 1 to 21839)
 AUTHORS Leenhouts, K.K.
 TITLE Direct Submission
 JOURNAL Submitted (27-APR-1994) Leenhouts K. K., Institute for Biological
 Sciences, Department of Genetics, Kerklaan 30, Haren, The
 Netherlands, 9751 NN
 COMMENT On May 26, 1994 this sequence version replaced gi:475962.
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the above report in format

NCBI Entrez Nucleotide QUERY BLAST Entrez ?

Other Formats: FASTA Graphic

Links: Protein Related Sequences

LOCUS PDCRAFOPER 21838 bp DNA BCT 23-MAY-1994
 DEFINITION *Pediococcus pentosaceus* raffinose operon genes.
 ACCESSION L32093
 NID g493181
 KEYWORDS agaR gene; agaS gene; agl gene; alpha-galactosidase;
 alpha-glucosidase; fructokinase; insertion element; permease; rafP
 gene; rafR gene; raffinose operon; regulatory protein; scrA gene;
 scrB gene; scrK gene; scrR gene; sucrase; sucrose-6-phosphate;
 transport protein.
 SOURCE *Pediococcus pentosaceus* (strain PPE1.0) DNA; Insertion sequence
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pentosaceus (strain PPE1.0) DNA.
 ORGANISM *Pediococcus pentosaceus*
 Eubacteria; Firmicutes; Low G+C gram-positive bacteria;
 Lactobacillaceae; *Pediococcus*.
 REFERENCE 1 (bases 1 to 21838)
 AUTHORS Leenhouts, K.J., Bolhuis, A.A., Kok, J.J. and Venema, G.G.
 TITLE The sucrose and raffinose operons of *Pediococcus pentosaceus* PPE1.0
 JOURNAL Unpublished (1994)
 COMMENT On May 25, 1994 this sequence version replaced gi:475106.
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the above report in

Other Formats:

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ECORA

NCBI Entrez Nucleotide QUERY BLAST Entrez ?

Other Formats: FASTA Graphic

Links: MEDLINE Protein Related Sequences

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 ORGANISM Escherichia coli
 Eubacteria; Proteobacteria; gamma subdivision; Enterobacteriaceae; Escherichia.
 REFERENCE 1 (bases 1 to 5284)
 AUTHORS Aslanidis,C., Schmid,K. and Schmitt,R.
 TITLE Nucleotide sequences and operon structure of plasmid-borne genes mediating uptake and utilization of raffinose in Escherichia coli
 JOURNAL J. Bacteriol. 171, 6753-6763 (1989)
 MEDLINE 90078124
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